Comments

The Applicant wishes to thank Examiner Tran for courtesy extended in the telephone interview with the undersigned on February 6, 2008. While an agreement was not reached in respect of the claims under review, the Applicant has amended the claims, and provides the following discussion, in view of the comments made therein.

The amendments presented herein to the claims, are in the nature of claim clarification and limitation, and no new subject matter has been introduced as a result of the claim amendments.

In particular, the product claims 1, 2 and 6 to 9, have been cancelled. As such, all of the product claims have now been removed from the present application.

Claim 11, which is now the main independent claim directed to the process, has been amended for clarification, and has been amended to incorporate the subject matter of Claims 14 and 19. As such, Claims 14 and 19 have been cancelled.

With this amendment, Claim 11 is now directed to selected, naturally occurring, non-winterized, saturated, partially saturated, or unsaturated oil of a specific type. As such, the nature of the oil component has been more clearly identified. As such, the oils and fats identified in Claim 11 are clearly distinguished from the oil components used in prior art methods, in that the oils and fats are used under specific conditions, and in accordance with a specific methodology. None of the cited prior art documents provide the method of Claim 11.

As a result of these amendments, Claims 11, 12, and 17 to 19 are now pending in the present application.

Remarks

For discussion purposes, the Applicant wishes to provide some background information on the state of the art in this area.

The art of pastry production is historically well known and has been practiced for centuries. At its most fundamental level, a pastry material is a combination of flour, water and a fat (or oil) that is mixed together to form an apparent homogeneous material that is rolled into a flat layer, and then positioned in place, and baked. By choice of the consumer, it is desirable to

produce a pastry that, when baked, is light and flaky, and is not heavy and/or mealy in texture. Thus, the pastry chef or pastry producer constantly seeks to find methods which will produce a pastry material mixture which provides a light, flaky pastry when baked.

However, while the pastry material may appear homogenous when rolled, a closer examination will reveal that the secret to producing a flaky pastry, is in having the fat/oil component distributed within a number of distinct cells within the pastry material, and not evenly distributed within the mixture. Moreover, it is also known within the art that if the fat/oil is, or at any time becomes, evenly distributed within the pastry mixture, then a heavy and/or mealy pastry is obtained. This is typically caused by premature liquidation of the fat/oil during the mixing process.

In contrast though, if the fat/oil is located within, and remains within, a series of fat/oil-containing cells within the pastry until the pastry material is baked, then a flaky pastry is obtained. It is believed that during baking, the solid fat/oil material liquefies within an already hardening flour and water structure, resulting in a flaky pastry.

At one time, such as 50 years ago or more, it was common to use solid, animal fat-based materials such as lard, or the like, to produce pastry materials. Lard is basically solid at room temperatures, and unless excess force was used in rolling the pastry, the lard would form, and stay within, fat/oil cells in the pastry material. On baking, the lard would liquify to produce a flaky pastry.

Even though lard is a room temperature solid though, it was also known to use cooled rollers, and/or even a cooled counter-top in order to prevent the lard from liquefying during rolling of the pastry material, or at some time prior to baking. Thus, even though lard is a solid, it was still apparent to the skilled artisan that allowing the fat/oil to liquify at any point during the rolling process, or during the pastry material production, would result in a poor pastry. Further, it is clear to those skilled in the art, that there is no way to "correct" a pastry product once the fat/oil has liquified. As such, as soon as the oil has liquified in the pastry material (prior to baking), there is little chance of the production of a light, flaky pastry.

In the 1950's and 1960's, the use of vegetable oil as a replacement for animal fats became popular. However, most vegetable oils are liquids at room temperature. In order to produce a

solid material suitable for pastry production, the liquid vegetable oils were hydrogenated in order to raise their liquidation (or melting) points. These materials were widely used, and were quite capable of producing a flaky pastry. However, as is now well known, the hydrogenation process results in the creation of so-called "trans fats" which are now recognized as being detrimental to human health. As such, the industry seeks to provide ways and methods to eliminate the use of hydrogenated vegetable oils and fats, but without having to return to the animal fat options.

Numerous individuals and companies have sought such a process in order to eliminate the use of hydrogenated vegetable oils.

While it might be trite to suggest that the vegetable oil be used at a temperature below its liquidation point, this suggestion only provides so much information, and leaves a great deal of the pastry production process unclear. Freezing the oil might be the start of the process, but as previously stated, if the oil is allowed to reach a temperature at which it liquefies at any point during production, then the pastry is ruined.

In a large bakery, such as for the "industrial" production of pies or the like, it is essential to ensure that the process be designed so as to clearly avoid any possibility of the oil becoming a liquid, prior to the baking process. This is not an easy accomplishment, but this is exactly what the Applicant's have done in the present invention. Namely, they have provided a complete pastry production process that allows a light, flaky pastry to be produced in an industrial environment, while still permitting the replacement of higher melting fats and oils with lower melting point, non-hydrogenated vegetable oils. Further, by following the process as taught, the pastry chef, or industrial baker, is provided with a process which eliminates the possibility of the oil liquefying prematurely, and thus ruining the pastry material.

Although with hindsight, each step in the process might appear to be a logical or possible option, prior to Applicant's invention, the skilled artisans in this area had not succeeded in producing a process which took all of the necessary steps required to produce a light, flaky pastry using an oil which would essentially be liquid at room temperature. As such, the present invention provides, describes and claims the steps necessary to use a typical liquid vegetable oil, and use it to produce a trans fat-free pastry, which is free of hydrogenated vegetable oils.

The Examiner has cited a number of documents that provide various clues to the

complete process. However, it is respectfully submitted that none of these documents provide the complete process. While with hindsight, the various options might be connected together to provide the various steps, none of the prior art documents provide, suggest or otherwise motivate the skilled artisan to adopt the process of the present invention. As such, the Applicant contends that the prior art, or any combination thereof, fails to teach the artisan how to select an appropriate technique from the vast array of possible approaches to solving this problem.

Accordingly, the Applicant contends that the cited prior art, either individually or in any combination thereof, fails to provide the complete methodology required to practice the present invention. As such, the Applicant contends that the present invention is non-obvious over the cited prior art. Further, the Examiner has not shown any motivation for the skilled artisan to modify and adapt the cited art, in order to recreate the Applicant's process.

The Applicant contends that he is only required to compare his invention to what is actually taught in the prior art. He is not required to compare his invention to a theoretical combination that does not exist. Nowhere in the prior art, is the complete process described by the Applicant, taught or suggested.

The Applicant now wishes to discuss the prior art. This will initially be done on an individual basis to determine the differences between the present invention and the cited art document. After this discussion, the combination of the art, as suggested by the Examiner will be reviewed.

US Patent No. 5866187 - "Kincs"

Kincs provides a system for pelletizing vegetable oils which amounts to heating the oils to a point where they are liquid, cooling the heated liquid to a point below their melting point, "extruding" the solidifying mass through a collection of holes at one end of the chiller, and then collecting the solidified pellets of cooled oil as they break off and fall from the holes at the end of the chiller.

The pellets are stable at room temperature, and can be used in the pelletized form.

Kincs mentions the use of various vegetable oils, and these are listed below. In addition,

the melting point of the indicated oil is also provided.

Soybean oil	-12ºC
Cottonseed oil	0ºC
Peanut oil	3ºC
Corn oil	-5ºC

Clearly, the melting points of all of these oils are so low, that all would be liquid at room temperature, and if put through the chiller unit of Kincs (operating at a minimum temperature of 12.8ºC - Col. 2, line 63), they would not solidify. As such, it can only be concluded that Kincs must have used at least partially hydrogenated oils in order to prepare room temperature solid pellets. Thus, even though similar oils are named, the Kincs oils must have been modified by hydrogenation, and therefore, they do not meet the criteria of the present claim as being oils having a freezing point of between -35° C and +5° C. As such, they fall outside of the claims of the present invention.

However, even if the disclosure of Kincs were extended to produce solid pellets of lower melting point vegetable oils at lower temperatures, Kincs does not provide any teachings of any of the following steps that would be necessary for the production of a flaky pastry using these frozen pellets. In particular, Kincs does nothing to explain how to take a lower melting temperature oil through the pastry production process, while avoiding premature liquidation of the solidified oil.

Thus, Kincs only provides a technique for producing a solidified oil (and most likely a hydrogenated oil) in a pelletized form. Other than make vague references to the use of the pelletized oils in pastry production in either their solid or refrigerated state (Col 4, line 52), Kincs does not supply the skilled artisan with the information required to use lower-melting point, (non-hydrogenated) oils, in pastry production.

Again, it is trite to say that oils with lower melting points can be used in pastry production merely by cooling them to below their melting point, but this does not address how to take that cooled, solidified oil through the pastry making process, and ensure that premature

liquidation of the oil, does not occur.

Further, it does not teach the artisan to cool the oil/fat only to a temperature wherein it has a consistency similar to pork lard at 4°C. Instead, Kincs teaches to freeze the oil/fat to a temperature wherein it will break under it's own weight as it exits the chiller apparatus.

US Patent No. 5766664 - "Peleg"

Peleg provides a method for producing a pie crust in which the pastry includes a starch component, and additional water, which is used to replace at least part of the fat component. In a preferred embodiment, the fat component can be emulsified in water, prior to use.

The preferred Peleg composition, as listed in Column 2, includes 55-65% flour, 5-25% of a "plastic" (e.g. solid) animal/vegetable fat, 1 to 8% starch, 10-25% water, optionally 0-10% of a liquid vegetable oil, and other minor ingredients. Peleg therefore clearly contemplates the continued use of animal and/or solid vegetable fats in a significant amount. The liquified vegetable oils are either optional, or used in amounts of up to 10%, but are always used in combination with the solidified fats. In addition, and perhaps more importantly, Peleg relies on the starch component to provide the structure necessary for the flaky pastry he desired.

Peleg indicates that the liquid vegetable oils can be corn oil, cottonseed oil, peanut oil, safflower oil, sesame oil, sunflower oil, canola oil, soybean oil, or mixtures thereof. However, these liquid oils are only a (minor) component of the total oil/fat content. Peleg still requires a significant amount of a "plastic" animal or vegetable fat.

There is no indication that the complete fat component of the Peleg system can be comprised of a normally liquid vegetable oil, or that the starch component can be eliminated.

While Peleg might mention the use of cooled water at 1.6°C, or a cooled emulsion at 1.6-7.1°C (Col. 3, lines 19 to 27), this information still would not provide the skilled artisan with the information that is required in the practice of the present invention.

Even though the use of cool water is described, it is not the same as in the Applicant's invention since it does not meet the requirement of the present invention that the water constituent, when mixed with the flour, comprise ice particles, and preferably, up to 50% of shaved, flaked or finely ground ice. Ice is necessary within the pastry mixture as the mixture is being blended and

mixed, in order to provide cooling to the mixture. Ice and cool water do not absorb heat in a similar manner, and it is respectfully presented that the ice component is needed to ensure that the pastry mixture does not overheat from the blending operation, and thus liquify the frozen oil/fat constituent which is also present in the pastry mixture. Cool water alone is not sufficient.

Further however, even though Peleg might use cool water, he does not explain how to eliminate all of the "plastic" animal or vegetable fat, and eliminate the use of starch. As such, Peleg provides little information to the skilled artisan trying to produce a pastry mixture from a non-hydrogenated and normally-liquid vegetable oil, together with just flour and water.

"Professional Baking" Book - "textbook"

The textbook has been cited by the Examiner to support the position that it is known that the pie dough should be kept cool, about 15°C. This is well known, in the prior art, as indicated hereinabove. However, under point 1 of the "Temperature" section of the textbook, two additional points are made by the textbook author. First, the author indicates that if the shortening is too warm, it blends too quickly with the flour, and thus produces the mealy pastry. This is as described and mentioned hereinabove. Second, if the shortening is too cold, it is too firm to be easily worked. As such, it is clear that control of the temperature of the system is critical to the successful production of a flaky pastry.

The textbook also indicates that the water (or milk) should be added cold (e.g. 4°C or less), but it is noted that it is added as water, and the next effect is still to keep the temperature of the total system at or near 15°C, as specified hereinabove.

As such, the textbook merely indicates that temperature is important, and that to control the temperature at a temperature of approximately 15°C, the water should be added at a temperature of 4°C or colder.

There is no indication of what steps the baker should take when the fat/oil is a liquid at 15°C, and how to adjust the process accordingly, to ensure a flaky pastry. This still leaves the baker to determine the necessary methodology required to provide a complete process for use with low freezing temperature, naturally occurring oils.

Discussion

In general, with respect to a combination of all of the cited art, while it might be trite to say that the temperature needs to be varied and adjusted according to the needs of the user, it is not an obvious conclusion from the teachings of the prior art how one would:

i) eliminate all of the higher melting oils and fats, including animal or hydrogenated vegetable oils or fats as well as:

a) eliminating the use of starch and emulsified mixtures of fats;

b) operating at temperatures practical for industrial applications;

c) use only non-hydrogenated liquid vegetable oils;

d) produce a pastry mixture that can be easily worked in a normal manner; and

e) provide a pastry mixture which produces a flaky pastry when baked.

Absent hindsight to the present invention, it is not clear how the Examiner, or any skilled artisan, could collect together the information described in the cited documents, and immediately and/or without undue experimentation, know that the process of the present invention would provide the desired results. There are literally hundreds, if not thousands of possible variations and combinations that could result from the combined teachings of Kincs, Peleg and the cited textbook. None of these combinations though, would include all of the features of the present application, in the manner taught in the present invention. Accordingly, it is difficult to understand how the Examiner can support a position wherein the combined teachings of the cited art, would lead to the present invention.

The Applicant contends that the inventor need only provide a mere scintilla of inventiveness in order for an invention to be patentable. Clearly, in the present application, the combination of ingredients and process conditions more than satisfies this requirement, and the combination of the prior art does not lead, suggest or motivate the skilled artisan to adopt the methodology described and claimed in the present application.

The Present Invention

The present invention provides strict process limitations and product selection limitations in order to provide the desired result, namely to produce a flaky pastry from a mixture of flour, water and a liquid, non-hydrogenated, vegetable oil. The current (unmarked) version of the main claim is reproduced hereinbelow:

11. A method of producing a cold-mixed pie crust mixture comprising as its major constituents flour, water, and a frozen oil/fat system having zero hydrogenated fat constituents, said method comprising the steps of:

(a) cooling a naturally occurring, non-winterized long-chain vegetable oil having at least sixteen carbon atoms to a freezing temperature in the range of +5°C to -35°C, so as to obtain a frozen oil/fat system, at which freezing temperature said frozen oil/fat system has a consistency similar to that of pork lard at +4°C;

(b) cooling a water constituent comprising a water and ice mixture to a temperature in the range of 0°C to +15°C, and wherein up to 50% of the water constituent, when first mixed at least with the flour constituent, is shaved, flaked, or finely ground ice; and

(c) mixing said flour constituent, said water constituent, and said frozen oil/fat system in a room or mixing environment having a temperature of 5°C to 20°C, so as to form a cold-mixed pie crust mixture; and

wherein said vegetable oil is a saturated, partially saturated, or unsaturated oil chosen from the group consisting of canola oil, flaxseed oil, sunflower oil, corn oil, olive oil, soybean oil, peanut oil, cottonseed oil, safflower oil, and mixtures thereof,

wherein the temperature of the mixture of step (c) is in the range of from 5°C to 10°C.

Referring specifically to claim 11, the Applicant now reviews each and every one of the process steps requisite in the present claim, and the inherent restrictions as they apply to the claimed process.

First, the claim teaches that it relates to a process to produce a **cold-mixed pie crust**

mixture. This means that the major constituents of the pie crust mixture are mixed together in a room or other mixing environment which is cold: that is, the temperature is greater than +5°C but less than +20°C as specified in the claim. More specifically, it is now also stated that the temperature of the combined cold-mixed pie crust mixture, in step "c", should be in the range of +5 to 10°C.

Next, the claim teaches that the major constituents of the pie crust pastry formulation are **flour, water, and a frozen oil/fat system.** The main claim does not teach, or require additional major components such as a sweetening component, an egg component, a milk component, a starch component, a "plastic" animal fat, or any other component. In its base formulation, only flour, water and a frozen vegetable oil/fat system are used.

The **flour** component is not described in detail in the claim, but it is clear from the claim description, that the flour component should be used in a fashion consistent with a cold-mixed pie crust mixture.

The **water** component is intended to be cool or cold, in order to be consistent with a cold-mixed pie crust mixture, and is a mixture of ice and water. Preferably, up to 50% of the water content is provided in the form of small ice, namely shaved, flaked or finely ground ice. This ice component ensures that the water, and ultimately the pastry mixture, remain at a suitable temperature during processing. Further, the present application, as it is published, clearly states at paragraph 19 that it is well known to use cold water in the preparation of pie crust pastry. However, the application goes on to state, and the fact is, that the inventors herein have unexpectedly discovered, that if up to 50% of the water constituent comprises ice (which may be shaved, flaked, or finely ground), then a better result is achieved. This surprising result is not just because of the temperature control of the water component, but also because the use of ice particles. By their very definition, the ice particles are small which ensures that there will be less likelihood of oil absorption by the flour constituent. Moreover, there will be less friction between particles of the flour, which can also reduce the chance of mealiness in the pastry when it is baked.

Thus, the inclusion of ice within the pastry mixture has surprising results, and clearly the concept of mixing ice into the pastry mixture is not suggested by any of the cited documents.

The **frozen oil/fat system** is another key feature of the present invention, and is quite clearly specified in the claim. The oil/fat system must be a naturally occurring vegetable oil that has at least 16 carbon atoms. It must also include zero hydrogenated fat constituents which clearly eliminates oils which have been hydrogenated to adjust (or raise) their melting points. In the present application, the Applicants seek to use only naturally occurring, non-modified oils.

The oil/fat system is also non-winterized. As the Examiner is aware, oils used at the temperatures encountered in the present invention will become cloudy or hazy as the oil components begin to crystalize. Commonly, the oils are therefore modified to reduce or eliminate this cloudiness by "winterizing" the oil. However, in keeping with the focus of the present application, it is made clear that non-winterized oils are entirely satisfactory in the present invention. As a consequence, the industrial baker no longer needs to buy, use or prepare winterized oils, but instead can simply use the pure natural oils.

Next, the oil/fat system has a freezing point of between -35°C and +5°C. These oils would clearly not be suitable in the device described and exemplified by Kincs, but more importantly, clearly restrict the present invention to the naturally occurring vegetable oils. Clearly if the oils listed in the present application (namely canola oil, flaxseed oil, sunflower oil, corn oil, olive oil, soybean oil, peanut oil, cottonseed oil and safflower oil) are used, it is essential that they be non-hydrogenated since any hydrogenation will likely increase the freezing point to above +5°C.

An important consideration is also that the oil/fat system must be used at a temperature wherein it is frozen. However, this does not mean that the oil is frozen so that it is solid, for this would prove difficult to mix into the flour and water pastry mixture. Instead, it is clearly specified that the oil/fat system must be utilized at a temperature wherein it has a consistency similar to that of pork lard at +4°C. The consistency of pork lard at +4°C is well known to the skilled artisan, and it is important for the frozen oil/fat system of the present invention to closely match that consistency. This ensures that the oil/fat system can be easily incorporated into the pastry mixture.

It can now be asked, in total: what has the inventor taught in the present application? In its most important feature, the inventor has provided guidance to the skilled artisan on the selection and use of low melting point vegetable oils in the production of a pastry pie crust

mixture. Specifically, the skilled artisan is taught to use a naturally occurring vegetable oil having a chain length of at least 16 carbon atoms, and a freezing point of between -35°C and +5°C. Moreover, it is taught, that the oil/fat system is to be used at a temperature wherein the frozen oil/fat system has a consistency similar to that of pork lard at +4°C. As the Examiner is aware, an oil does not freeze solid in the same manner as, for example, water. Instead, the oil slowly solidifies as the temperature decreases until at some point it is a "plastic" solid. A further temperature decrease will result in a hardening of the plastic solid. Given this property of the oil/fat system, the skilled artisan would know to use a particular oil (or oil mixture) at a temperature wherein it had a consistency similar to pork lard at +4°C.

Further, the artisan is taught how to use this selected oil/fat system in a mixture of water and flour, under conditions wherein a suitably useful pie crust mixture can be prepared.

In combination, therefore, the skilled artisan, on reading the present application, knows the type of oil to be selected, and knows the temperature at which the oil is intended to be used (namely at a temperature wherein it has a consistency similar to pork lard). The artisan also knows that cool water having up to 50% shaved ice, should be used. Further, the artisan knows the oil/fat system and water are to be mixed with flour in a cold room environment, wherein the temperature in the mixing environment is between +5°C and +20°C. Still further, the artisan knows the limits of the temperature range of the completed cold-mixed pie crust, which must be maintained, <u>after</u> mixing of the ingredients. The combination of these features results in a pie crust mixture having the desired properties, namely a flaky pastry structure. Further, the advantage of this system is that the Applicant has instructed the skilled artisan on a process for the production of a flaky pastry product, which product utilizes non-hydrogenated, naturally occurring, C_{16} or greater, vegetable oils, in a simple system which avoids the use of products such as starch, or emulsified animal fat mixtures, and which allows the use of cooled vegetable oils without needing winterization of the oil components.

Furthermore, the artisan is provided with an elegant and simple process for pastry production which can be easily adapted for use in an industrial bakery environment.

The process of the present invention provides an improvement over the current systems, and those skilled in the art have found the results provided in the present invention to be

surprising.

Again, the Applicant contends that some of the various individual features of the present invention might be separately known or predictable. However, the overall combination of features provides an inventive contribution to the art, and this overall combination is not evident from the prior art. Only with hindsight to the Applicant's invention can the teachings of Kincs, Peleg and the textbook be combined in the fashion suggested by the Examiner. No one skilled in the art would be able to readily predict the process claimed in the present application, without such hindsight. As such, the Applicant contends that the present application is not obvious over the cited prior art, and therefore, is allowable in its present form.

Response to the Examiner's comments

The Examiner comments that Kincs provides a process to make pelletized shortening, and that the process "comprises the steps of melting vegetable oil such that it is liquefied, and then chilling the oil to solidify it and form pellets. The vegetable oil will typically be primarily soybean oil, cottonseed oil, peanut oil, corn oil and combination thereof. The chilling takes place at temperature of about 12.8 - 35 degree C, depending on the vegetable oil."

As explained hereinabove, though, at the temperatures described by Kincs, he is not solidifying the naturally occurring oils since these oils all have a melting point below 12.8°C. Accordingly, Kincs must be utilizing hydrogenated oils, or oils comprising at least some hydrogenation.

Further, the oils used by Kincs are oils that can be used to provide stable pellets at room temperature. While Kincs may name similar oils to the oils listed in the present application, he cannot be using the naturally occurring oils, which are of most importance in the present invention. Thus, it is incumbent on the reader of the Kincs document to be aware that the Kincs process applies only to hydrogenated oils. Using the teachings of Kincs, the skilled artisan can only prepare pastry from a solid pellet created by chilling the oil to a temperature at, or above, 12.8°C.

As such, Kincs does not provide any indication to the skilled artisan that naturally occurring, non-hydrogenated oils might be used instead. In order to make this leap, however, it is

still necessary for the skilled artisan to make more of a change than merely lowering the temperature of the Kincs chiller. Kincs does not teach how to use these lower-freezing point, frozen oils in a pastry production process, in the manner taught in the present invention. For example, Kincs does not teach the method of freezing the oil/fat only to a temperature wherein the frozen oil/fat has a consistency similar to that of pork lard at +4°C, as well as other requisite steps such as mixing in a cool environment, with water containing small ice particles.

The Examiner also comments that Peleg provides a pie crust formulation. However, the Peleg pie crust formulation requires starch, "plastic" animal/vegetable fats, and emulsifiers in order to prepare an emulsified animal/vegetable fat component. This is significantly different from the pie crust formulation of the present invention, and while Peleg optionally includes some liquid vegetable oil, the amount is minor, and in no way replaces all of the standard "plastic" animal or vegetable fats. As such, Peleg does not teach a pie crust formulation that has any of the features of the pie crust formulation of the present invention.

The Examiner also comments that the textbook teaches the pie dough should be kept cool at about 15°C during mixing. While this is known, it does not add anything to the Applicant's teaching of the remainder of the process steps required to prepare the pie crust mixtures of the present invention. Further, this does not teach the Applicant's requirement that the temperature after mixing of the cold-mixed pie crust mixture should be in the range of 5 to 10°C. This lowered temperature limitation is required over the traditional "cool" values found and taught in the prior art.

The Examiner further comments that Kincs "teach to make pie crusts; thus, it would have been obvious to one skilled in the art to use any known dough formulation to make the crust". With respect, this over-simplifies the situation in that it assumes that any mixture of oil, flour and water can be combined in any combination, and that a useable pie crust mixture will always result. Clearly, this is not correct, and the art is full of documents where skilled artisans are attempting to modify this basic formulation in order to provide pie crusts having different raw materials, and different final properties. Even with the amount of work and effort directed to this field, however, it is still clearly not possible to predict with any certainty how modification of the process parameters and production methodology would impact on the final pie crust preparation

and properties. Thus, the mere fact that Kincs discloses a general pie crust formulation that has some similarities to the present invention, is irrelevant to the method claim of the present invention. Once the decision has been made to replace the high melting point oils used by Kincs, with lower, naturally occurring (non-hydrogenated) long-chain oils, it is still necessary for the skilled artisan to conduct experimentation to determine how the process parameters are to be changed in order to achieve improved results. This is exactly what the current inventors have done.

For example, the Examiner is asked: if the shaved ice was not used, and the oil frozen to a lower temperature, would the process still work? The Applicant contends that it is impossible to predict how the process would need to be modified without further experimental results. Kincs, Peleg and the textbook provide no teachings on this aspect. As such, this is similar to, but not nearly as complex, as the obstacles originally faced by the present inventors.

Further, the next line of the Action is noted wherein reference is again made by the Examiner to the Peleg pastry formulation. This, however, is also considered irrelevant since Peleg uses a completely different formulation than that described in the present application.

The Examiner also comments that Kincs makes reference to "vegetable oil, typically partially hydrogenated vegetable oil". While this statement may allow Kincs to include non-hydrogenated oils, it is clear that the oils used by Kincs are oils that are solid at temperatures above 12.8°C. While this might include some naturally occurring vegetable oils such as coconut oils, it would not include the four oils listed by Kincs. The only way that these four oils would be solid at 12.8°C, is if they were hydrogenated. As such, the reader is clearly directed to the use of hydrogenated vegetable oils, or to oils which have a melting point greater than 12.8°C.

Given the current trend to replace hydrogenated oils, it is acknowledged that the reader of Kincs might wish to use different oils. However, it is still left to the reader to determine **how** to solidify the oil (e.g. lower the temperature, but to what point), **and** determine how to modify the remainder of the process methodology to allow a liquid, room temperature oil to be used in a low temperature pie crust formulation. Kincs provides no guidance on either of these modifications.

The Examiner also states that "the temperature is a result-effective variable which can be determined by one skilled in the art". Again, while the skilled artisan might wish to solidify the

vegetable oil, the selection of the proper temperature is not provided by Kincs. Instead, it is left to the present inventors to teach that the oil should be at a temperature wherein it has a consistency similar to pork lard at +4°C. Further, it is left to the present inventors to determine that even at this oil/fat temperature, it is still necessary to use an ice/water mixture rather than, for example, a simple cooled water constituent.

As such, even if the artisan knew to lower the temperature, he would not know what temperature would be required when freezing the fat/oil, and/or how to use that frozen fat/oil in a process that would ensure a flaky pastry.

The Examiner also appears to imply that the term "frozen" is synonymous with "solid". While this might be true for water, for example, it is clearly not true for oils which can change viscosity and then hardness, as they cool. The Applicant does not teach the use of a frozen, hard, solid oil material, but instead, teaches the use of a frozen oil that has the consistency of pork lard at +4°C. Nothing in Kincs would suggest this limitation to the skilled artisan. Instead, Kincs would have the oil solidified to the point where it would break off as it exited the chiller unit.

The Examiner also comments -with respect to winterization - that there is no indication in Kincs that the winterization steps are necessary. Obviously, Kincs has no need for winterization since his oils are first heated to a temperature at which they are clear, and have no cloudy or hazy properties, and then quickly cooled to a solid. As such, the concept of winterization is irrelevant to Kincs.

The elimination of the winterization step is merely one further advantage of the present application in that the skilled artisan is taught, - contrary to conventional practice - that the naturally occurring vegetable oils can be used at low temperatures in this process, and that there is no need for winterization. This provides a process improvement over the prior art conventions, and clearly would not be a conclusion that could be taken from a reading of Kincs since Kincs operates at temperatures much higher than the present invention.

Again, the Applicant seeks to provide a novel methodology to the baking industry, that provides advantages over the current practices found therein.

Next, the Examiner comments that "[k]nowing the unhealthy aspect of hydrogenated oil, it is readily apparent to one skilled in the [art] to select non-hydrogenated oil when desiring a

healthier product". With respect, this merely restates the problem which the Applicant seeks to address. Once the decision has been made to eliminate hydrogenated oil, how does the skilled artisan produce a suitable pie crust mixture from the non-hydrogenated oils. The industry has been using vegetable oils for over 60 years, and has been aware of the issues related to hydrogenated oils, for at least over 15 years. However, to date, no one has proposed or suggested the process described in the present invention as a method for replacing the hydrogenated oils.

As clearly evidenced from the methodology of the present invention, there is more to solving this problem than merely using non-hydrogenated oils at a lower temperature. Modifying the Kincs apparatus to produce frozen pellets of non-hydrogenated oils is clearly within the skill of the skilled artisan. However, this modification of Kincs is not enough to allow the skilled artisan to produce a flaky pastry.

Instead, the artisan requires additional information on the types of oils to use, the temperatures to use, the test for determining when the oil is at a proper temperature, the steps need to ensure that the oil does not liquify prematurely in the pastry mixture, and the like. As such, the decision to replace hydrogenated oils with non-hydrogenated oils is not a question of "swapping" one material for another. Instead, the process and methodology must be modified to allow the "swap" to take place. These process modifications are what the Applicant teaches.

The Examiner comments that it "is not an issue if Peleg discloses other ingredients because the claims do not exclude the other components disclosed by Peleg". The Applicant agrees that this would be true if the other ingredients were materials such as salt, or the like, used in a minor amount. However, Peleg's pie crust relies on the use of starch in a significant amount to form the pie crust, and more importantly, relies on the use of a "plastic" (e.g. solid) animal/vegetable fat, and optionally a liquid vegetable oil. As such, this is completely outside of the teachings of the present invention wherein the only oil to be used would be a vegetable oil that would be liquid at room temperature. Peleg's pie crust would fail completely if the starch and animal fat components were removed. As such, the pie crust formulation of Peleg's is completely outside of the teachings of the pie crust of the present invention, and would not provide any relevant information to the artisan attempting to replace all of the "plastic", hydrogenated vegetable or animal fat component of a pie crust.

The Examiner also comments that "it would have been an obvious matter of choice [to select hydrogenated vegetable fat or non-hydrogenated vegetable fat] depending on the nutrition desired. Again, for the reasons stated hereinabove, the Applicant contends that this merely states the problem faced by the artisan, but does not provide the solution.

The skilled artisan is seeking ways to allow the substitution of non-hydrogenated vegetable oil for hydrogenated vegetable oil. Again, however, it is not simply a matter of swapping one oil material for another depending on nutritional considerations. Instead the pie crust production methodology must be suitably modified to allow the substitution.

The Examiner also states that Peleg "teaches to use chilled water to form the dough [and it] is notoriously well known to use ice to form chilled water". The Applicant agrees that using ice for chilling purposes only, is well known. However, none of the cited documents use the ice/water mixture in the same fashion for the same results.

In the present application, the person skilled in the art will realize that the claim limitation requires that there must be some ice in the water constituent when it is first mixed with at least the flour constituent. The claim now clearly requires the presence of some ice, and by its very definition as set forth in the claim, the ice component of the water constituent comprises small particles thereof. This is significantly different than using ice to prepare cool water. The suggestion by the Examiner that using ice to prepare "cool water", does not in any way teach the skilled artisan that shaved, flaked or finely ground ice must be used in the present methodology, in order to achieve the resulting advantages which have been observed by using crushed ice, or the like, during the initial mixing stage, as described hereinabove. Further, it does not teach the combination of the oil/fat frozen to a temperature so as to provide a fat/oil constituent with a specified consistency, and then using this oil/fat constituent and flour, with the ice/water mixture.

The Professional Baking textbook merely suggests that when water or milk is used, it should be at about 4° C. or colder; and that the pie "dough" should be kept cool at about 15° C. What that says, however, is only that the water must be cool. It does not state, suggest or imply that the water, when mixed with the flour and oil, should contain small ice particles. Clearly, Peleg says nothing said about using ice, and the working temperature that is proposed by Peleg is at the very high end of the claimed temperature range of the present invention. Neither Peleg or

the textbook teach a process wherein the temperature of the pastry mixture, after mixing, is maintained in the range of from 5 to 10ºC.

However, further to the discussion with the Examiner, even if prior art can be shown wherein shave ice, or the like is mixed into the pastry mixture, it still does not teach the oil/fat temperature parameters which are to be used, in combination with the ice/water mixture. For example, the temperature range of the final mixture or the temperature of the fat/oil component.

Finally, the Examiner comments that it "would have been obvious [without hindsight] to use the known method of making pie crusts as taught in Peleg and the textbook to make the pie crust as disclosed in Kincs". While it is acknowledged that any obviousness conclusion must involve some hindsight reasoning, it is also necessary for the obviousness conclusion to be fairly based on the teachings, suggestions or other motivations resulting from the prior art.

The Peleg formulation requires the use of "plastic" animal/vegetable fat and starch in order to produce a pie crust. The use of an optional, and minor amount of a liquid vegetable oil is disclosed. As such, Peleg teaches little to the artisan interested in the present invention.

The "textbook" provides a simple formulation for a pie crust, but again under the heading of "Ingredients", part 2. "Fat", the very first line states that "regular hydrogenated shortening is the most popular fat for pie crust because it has the right plastic consistency to produce a flaky crust". Clearly the textbook points directly to the use of hydrogenated materials, and provides no indication that other non-hydrogenated materials might be used.

Thus, Peleg and the textbook provide no indication that the hydrogenated oil can be completely replaced in a pie crust. More importantly, though, neither document provides the necessary methodology to replace the hydrogenated material, even if such a decision were desired for nutritional or other reasons. Consequently, when these documents are combined with Kincs, the best that might be achieved is that Kincs would allow a non-hydrogenated vegetable oil to be solidified. However, this is only part of the problem and it is still necessary to modify the pie crust formation methodology to allow the non-hydrogenated (normally liquid at room temperature) vegetable oils to be used. None of Kincs, Peleg or the textbook provide any teaching or suggestion on how to modify the process methodology. While there may be plenty of motivation for the skilled artisan to seek to make the substitution taught in the present

application, there is nothing in Kincs, Peleg or the textbook to supply the motivation for the skilled artisan to adopt all of the process modifications taught in the present application. Only with hindsight to the present invention could any interpretation of the teachings of these documents lead to the present invention.

To support an obviousness rejection, it is noted that in order to establish a *prima facie* case of obviousness, "[f]irst, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references, when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." MPEP 2142.

Clearly, the Applicant contends that the cited documents do not meet these criteria, or in fact, any one of them.

In view of these comments, the Applicant therefore contends that the present application is allowable in its present format, and early allowance of this application is respectfully requested.

Respectfully submitted,
Gowan Intellectual Property

Gowan Intellectual Property
1075 North Service Road West
Suite # 203
Oakville, Ontario
CANADA L6M 2G2
T: 905-827-5000
F. 905-827-5087

Per: **Gerald A. Gowan**
Registered Patent & Trade-Mark Agent
US Registration No. 37,041/US Client No. 58388
email: ggowan@gowanip.com

GAG:tim